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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,925	12/27/2000	Kenji Sakai	SAKA16	3454

1444 7590 07/15/2004

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EXAMINER

SAVAGE, JASON L

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/747,925	Applicant(s) SAKAI ET AL.	
	Examiner Jason L. Savage	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10242001, 12182002</u> . | 6) <input type="checkbox"/> Other: _____ |

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Asada et al. (US 4,941,919).

Asada teaches a sintered copper-based sliding material comprising hard substance particles harder in hardness than copper alloy such as alumina and graphite (col. 1, ln. 50-53). Asada teaches that the copper alloy powder and hard particles are mixed and blended which is analogous to Applicant's mechanical alloying step (col. 4, ln. 25-59 and Figure 1).

Regarding the limitation that the hard particles are contained in the copper-based sliding material in an amount between 0.1 to 5 vol%, Asada exemplifies multiple embodiments wherein the amount of hard particles is limited to less than 5 wt% (col. 6, Table 1, Ex 1, 3, 8, 22). Although wt% and vol% are not the exact same, it is the position of the Examiner that they would be roughly the same and as such, Asada

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exemplifies embodiments wherein the amount of hard particles anticipates the range claimed by Applicant. In the alternative, it would have been obvious to one of ordinary skill in the art to have included limited amounts of the hard phase materials in the copper-based sliding material since Asada teaches that the contents of graphite may be as low as 1 wt% and the content of alumina may be as low as 0.1 wt% (col. 2, ln. 50-68). A copper-based sliding material having such limited amounts of hard particles would fall within the range claimed by Applicant.

Regarding the limitation that if the material surface were divided into squares having a length of 20 microns, that at 80 % of the squares would contain one of the hard particles. This limitation is taken as meaning that the particles are uniformly distributed. While Asada does not specifically recite the particle distribution is uniform, the method in which the material is formed by blending for 24 hours would result in a uniform distribution of hard particles (col. 5, ln. 46-65). Furthermore, the teaching that a non-uniform mixture is disadvantageous would also indicate that Asada's composite sliding material desirably has a uniform distribution (col. 4, ln. 52-59). Since the composite sliding material of Asada contains the same amount of hard particles and the particles are uniformly distributed within the material, the copper-sliding material would meet the claim limitation that a hard particle could be found in most of the squares if the material were divided into sections as claimed by Applicant.

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. (US 4,941,919) as applied to claims 1-2 above and in further view of Tanaka et al. (US 5,328,772).

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Asada teaches what is set forth above but is silent to the copper-based sliding material being bonded to a backing metal or an intermediate layer. Tanaka teaches that conventional copper-based sliding materials are conventionally used in multilayer bearing structures which typically include a backing layer of steel (col. 1, ln. 19-39). Tanaka further teaches that the inclusion of a intermediate plating layer of copper increased the adhesive strength between the bearing layer and a backing layer (col. 2, ln. 11-22 and Table 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the copper-based sliding material of Asada in a conventional bearing structure having a metal backing layer and copper intermediate layer in order to form a plain bearing having a high antiseizure property and increased fatigue resistance and increased adhesion.

Regarding the limitation in claim 4 that the copper-based sliding material have a thickness of at least 0.05 mm, it would have been within the purview of one of ordinary skill in the art to have determined what thickness for the copper-based sliding material layer would be necessary in order to provide the bearing structure with proper antiseizure and wear resistance properties.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason Savage
7-9-04



DEBORAH JONES
SUPERVISORY PATENT EXAMINER